

REMARKS

Claims 1-15 are pending in the application.

Claim 12 is amended above to make it dependent upon claim 11.

I. THE SECTION 112, SECOND PARAGRAPH REJECTION

The examiner rejected claim 12 for lacking antecedent basis for the term “circumferentially”.

This rejection is overcome by amending claim 12 to depend upon claim 11.

II. TRAVERSE OF THE OBVIOUSNESS REJECTION

The examiner rejected claims 1-15 for being obvious over Xu et al (6422148) in view of Yang et al (6520258). It is the examiner’s position that Xu et al discloses all of the features of independent claim 1 except for the feature of the composite material containing the debris within the carrier. The examiner goes on to allege that Yang et al discloses a retrievable gun system employing carrier strips which are designed to stay intact after firing of a shaped charge. The examiner concludes that it would have been obvious to employ the carrier in Yang et al in the gun assembly of Xu et al “in order to reduce debris in the well bore which results in better fluid flow.”

Claims 1-15 are non-obvious and patentable because the examiner has not made out a *prima facie* case of obviousness. In particular the cited prior art does not disclose a composite material that is non-frangible. Moreover, the combination of Xu et al with Yang et al does not result in a carrier that is capable of substantially containing debris created within the carrier as a result of firing as independent claim 1 requires.

A. There is No *Prima Facie* Case of Obviousness

Claims 1-15 are non-obvious and patentable because the examiner has not established a *prima facie* case of obviousness. The Examiner bears the burden of establishing *prima facie* obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). A *prima facie* case of obviousness cannot be constructed without showing that all of the features of the claimed invention are found in the prior art. *See e.g., In re Rouffet*, 199 Fed.3d 1350, 1359 (Fed. Cir. 1998). A *prima facie* case of obviousness has not been established in this application at least

because neither of the cited references discloses using a composite material in the shaped charge liner that is non-frangible.

While the Applicant agrees that Xu et al discloses a carrier which is at least partially formed from a composite material, more is required. The composite material must be non-frangible. Xu et al does not disclose a composite material that is non-frangible as claimed. Indeed Xu et al specifically states in col 4, line 55- 57, that "*...the composite materials used in our invention must be designed to be very brittle under the dynamic impact...*". Thus at minimum, there is no disclosure, or even the suggestion in Xu et al, that the composite material may be non-frangible. Moreover, Xu et al expressly teaches away from the use of a non-frangible carrier. Xu et al states in col 3, lines 39 to 41, that the composite is "*brittle... ... [such that the] component shatters into small pieces...*" The advantage of the frangible nature and the generation of small fragments is disclosed in col 6, lines 58 to 62, which states that the small pieces do not present a problem to the subsequent operation of the wellbore.

The examiner takes the position that "it is noted that the composite material can be either frangible or non-frangible based upon material choice." (See page 3 of the 9/05/2008 Office Action). It is unclear here whether the examiner takes the position that Xu et al. discloses both types of carrier materials or alternatively that one skilled in the art would understand that both materials are choices for the carrier. However, both positions are without merit. As noted above, Xu et al does not disclose non-frangible carrier materials. Further, one skilled in the art at the time of the invention would understand Xu et al to prohibit the use of non-frangible materials. Therefore it would not matter that the skilled person understood that such materials might be available since Xu et al prohibits their use. For these reasons, there is no *prima facie* case of obviousness and all claims 1-15 should be allowed.

B. The Combination of Xu et al and Yang et al. Would Not Result In The Claimed Invention

Claims 1-15 are also non-obvious and patentable because the combination of Xu et al and Yang et al suggested by the examiner in the Office Action would not result in the claimed invention. The Applicant's claim requires that the housing is at least partially formed from a composite material that is non-frangible in use, so as to retain the debris after initiation of the shaped charges. While the carrier in the Applicant's invention may comprise other materials, the claim defines that it is the composite housing that retains the debris, i.e. the Applicant's

composite does not fragment. In contrast, the composite housing in Xu et al is very brittle and is designed to shatter on detonation of the shaped charges, therefore the composite housing in Xu et al is not capable of retaining the debris within any given carrier. The assembly in Yang et al, in Figure 4B, teaches the use of a loading tube 520 (as an alternative arrangement to carrier strips 502), wherein said loading tube 520 is located inside a hollow carrier 522. Yang et al discloses in col. 8, line 60, that the carrier strips 502 are made from metal, which implies that the loading tube 520 is also formed from the same material.

As discussed earlier, the housing composite disclosed in Xu et al is a frangible and brittle composite, therefore if it were placed in the hollow metal carrier (520) of Yang et al, and subjected to a detonation impulse, the fragile composite (of Xu et al) will still shatter and disintegrate. Therefore, even when the carrier of Yang et al and the composite of Xu et al are combined, the brittle composite housing material shatters and does not retain the debris, i.e. the combination does not provide a composite material housing that retains the debris. Therefore, this combination does not result in the invention of Applicant's claim 1 because said claim requires that the composite housing is non-frangible and it further requires that it is the composite that retains the debris, i.e. without the use of an additional outer metal carrier.

The Applicant's invention is not merely retaining debris by "any means". The Applicant's invention is to the use of a housing comprising a composite material that is non-frangible, to retain the debris. There is no suggestion or even the merest hint in Xu et al or Yang et al, whether read in combination or isolation, to use a composite material which is non-frangible such that it retains debris after the detonation event. For this reason as well, independent claim 1 and claims 2-15 dependant thereon are non-obvious over Xu et al and Yang et al.

CONCLUSION

Claims 1-15 are believed to be ready for patenting for the reasons recited above. Favorable reconsideration and allowance of all pending application claims is, therefore, courteously solicited.

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